AGRONOMIC ALTERNATIVES FOR 1987

Roy G. Button
Saskatchewan Agriculture
Tisdale, Saskatchewan

Low market prices for most grains and oilseeds in relation to the cost of production is causing many producers to search for new ways of improving their economic returns. At present grain prices, growers are not looking at farming for a profit as they are focusing on survival. Decisions on using different agronomic practises can play a major role in helping growers survive through the present hard times in grain production. However, in many cases, utilizing good agronomic practises will reduce losses rather than make a farm profitable.

When evaluating agronomic alternatives for 1987, some major factors I feel are important to look at are:

1) The cost vs the benefits of decisions, both in the short and the long term, are of major concern to growers. Under present financial restraints, the short term benefits are of greater concern and will probably take priority over long term benefits for most producers. When providing recommendations on agronomic alternatives, it is important to stress the economics.

2) Individual growers have their own costs and concerns for crop production in 1987.

Large variations occur between producers in the cost of production and the returns they require to remain viable

farmers. As a result, agronomic recommendations should be evaluated in terms of a farmers own costs. All producers should be encouraged to evaluate their own figures.

Operating funds could be limited to many producers and could dictate what practises an individual could utilize. For example, recommendations could show a good return from using fertilizer but, if money is not available, alternatives will have to be considered.

A producer knows the land they farm better than anybody else. They have a good idea of what crops grow best, the yields they can obtain on stubble and fallow and how well it responds to inputs. They should utilize their information and maintain good records of production costs to forecast expected results.

A large variation exists in the risk producers are willing or have to take to maintain economically viable farms. Producers who have high equity in land and machinery have the option to farm conservatively and weather tough times. Producers with low equity may have to take more risks to produce high yields to meet interest payments.

3) The objective is to produce the maximum profit per acre or a maximum economic yield. The farmer who can produce a bushel of grain on his farm for the least cost has the chance of weathering low grain prices. To do this, you must maximize the costs that give you a high return and limit costs that provide low returns.

4) Government programs such as deficiency payments can have a direct effect on what agronomic decisions to make.

5) Large variations in soil and climatic conditions occur throughout the province. Agronomic practises that are recommended in one area may be completely opposite in other areas of the province. Alternatives have to be evaluated in relation to their adaptability to different areas of the province. When evaluating research information and recommendations, you have to be very consious of the environmental conditions under which it was conducted.

What agronomic alternatives do farmers have in 1987?

1. Crop Selection

Table 1 and 2 show input assumptions, the cash operating and fixed costs of growing crops on stubble in N.E. Sask. and the yields required to cover these costs.

Looking at the yields required to cover total costs, all crops require high yields. The crop with the greatest potential to cover costs is canola, then probably lentils and peas for N.E. Sask. A major concern with lentils is obtaining quality to have a marketable crop.

The figures show 101 bu/acre of feed barley is required to breakeven. If malting was obtained, at $3.50 per bushel, only 41 bu is required. The most profitable crop is malting barley. However, only 12-14% of the barley in Sask. goes malting; of this 60-65% in 2RW. 2RW barley is prone to disease in N.E. Sask. The odds of getting malting are probably less than a 10% chance, in N.E. Saskatchewan.

Table 3 and 4 show estimates of breakeven yields for crops grown in the Dark Brown soil zone in a 1/3-2/3 crop rotation.

Table 1: Assumptions for Costs of Production for Crops Grown in N.E. Sask.

1) Seed including cleaning:
   - Wheat - 1.5 bu/ac @ 4.00 bushel
   - Barley - 2.0 bu/ac @ 2.00 bushel
   - Canola - 5 lbs/ac @ 0.70 lb. treated
   - Flax - 40 lbs/ac @ 7.50 bushel
   - Peas (Century) - 170 lbs/ac @ 0.14 lb ($8.50/bu)
   - Lentils (Laird) - 85 lbs/ac @ 0.35 lb.
   - Canaryseed - 40 lbs/ac @ 0.15 lb.

2 Fertilizer - Nitrogen
   Cereals, Canaryseed - 60 lbs. N per acre @ 0.24/lb. N
   Canola - 70 lbs. N, Flax - 55 lbs. N, Peas - 20 lbs. N
   Other
   Phosphorus - 50 lbs. 11-51-0/acre @ $340/tonne
   Flax - 40 lbs. 11-51-0/acre

3) Chemicals:
   Herbicides - Cereals - 75% of acres sprayed for wildoats and 100% for broadleaf weeds
   - Canola - Wildoat
   - Flax - Wildoat and Broadleaf
   - Peas, Lentils - Wildoat, Broadleaf
   - Canaryseed - Wildoat, Broadleaf

   Others - Wheat - No Midge control
   - Barley - Seed treatment
   - Canola - Insect control - 25% crop/year
   - Flax - Seed treatment
   - Lentils - Desiccation

   Chemicals used and rates vary with individual farm weed problems and operator preference.

4) Operating Costs - Other than seed, fertilizer and chemicals, costs are based on farm records for Tisdale area.

5) Crop Insurance - 1986 Premium levels for 70% coverage on high dollar rate for F rated soils, Risk Area 17.

6) Operating interest as calculated on all cash operating costs at 10% for 6 months on all crops, 18 months for fallow.

7) Machinery depreciation is based on a machinery investment of $150 per cultivated acre depreciated at 15% on a straight line basis.

8) Building depreciation estimated at $30 per cultivated acre depreciated at 5%.

9) Labour and Management - We are assuming a living cost of $15 per seeded acre for return to labour and management.

10) Land cost was estimated as a cash rent of $25/acre or 5% return to investment on land valued at $500/acre. Actual land costs should be used by individual farmers.

11) Return to investment - No return to investment was calculated on building and machinery. At $150/acre for machinery and $30/acre for building at 8% would be an additional cost of $14.40/acre.

12) Crop prices were estimated from market values in January, 1987. No allowance was made for lost revenue on the crop stored until it could be marketed.

CROP PRODUCTION COSTS 1987 - (Dollars per Acre)

	Fallow	My Farm	Wheat	My Farm	Barley (Feed)	My Farm	Canola	My Farm	Flax	My Farm	Peas (Century)	My Farm	Lentils (Laird)	My Farm	Canarvseed	My Farm
CASH OPERATING COSTS																
Seed	$0.00		$6.00		$4.00		$3.50		$5.40		$23.80		$29.80		$6.00	
Fertilizer - Nitrogen	$0.00		$14.40		$14.40		$16.80		$13.20		$4.80		$0.00		$14.40	
- P + Other	$0.00		$7.70		$7.70		$7.70		$6.20		$7.70		$7.70		$7.70	
Chemical - Herbicides	$0.00		$10.50		$10.50		$11.00		$17.00		$18.00		$18.00		$13.50	
- Others	$0.00		$0.00		$1.10		$3.00		$0.80		$0.00		$14.00		$0.00	
Machinery Operating - Fuel	$7.00		$10.00		$10.00		$10.00		$10.00		$10.00		$10.00		$10.00	
- Repair	$3.00		$8.00		$8.00		$8.00		$8.00		$8.00		$8.00		$8.00	
Grain Drying	$0.00		$1.00		$1.50		$1.00		$1.00		$1.50		$1.50		$1.00	
Hired Labour / Custom	$0.00		$4.00		$4.00		$5.00		$4.00		$4.00		$4.00		$4.00	
Utilities	$1.50		$1.50		$1.50		$1.50		$1.50		$1.50		$1.50		$1.50	
Crop Insurance	$0.00		$3.80		$3.10		$4.70		$4.80		$5.50		$7.00		$3.20	
Insurance,Licences,Overhead	$2.50		$2.50		$2.50		$2.50		$2.50		$2.50		$2.50		$2.50	
Building Repair, Misc.	$2.00		$2.00		$2.00		$2.00		$2.00		$2.00		$2.00		$2.00	
Subtotal	$16.00		$71.40		$70.30		$76.70		$76.40		$89.30		$106.00		$73.80	
Interest on Operating	$2.40		$3.60		$3.50		$3.80		$3.80		$4.50		$5.30		$3.70	
TOTAL CASH OPERATING COST	$18.40		$75.00		$73.80		$80.50		$80.20		$93.80		$111.30		$77.50	
FIXED COSTS																
Taxes	$4.00		$4.00		$4.00		$4.00		$4.00		$4.00		$4.00		$4.00	
Machinery Depreciation	$9.00		$22.50		$22.50		$22.50		$22.50		$22.50		$22.50		$22.50	
Building Depreciation	$1.50		$1.50		$1.50		$1.50		$1.50		$1.50		$1.50		$1.50	
Land Cost	$25.00		$25.00		$25.00		$25.00		$25.00		$25.00		$25.00		$25.00	
Labour Mgmt., Living Allowance	$3.00		$15.00		$15.00		$15.00		$15.00		$15.00		$15.00		$15.00	
Total - Fixed Costs	$42.50		$68.00		$68.00		$68.00		$68.00		$68.00		$68.00		$68.00	
TOTAL COSTS	$60.90		$143.00		$141.80		$148.50		$148.20		$161.80		$179.30		$145.50	
BREAK-EVEN ANALYSIS - YIELDS (bu/acre or lbs/acre) REQUIRED TO COVER COSTS . CONTINUOUS CROPPING.																
Value Crop $/bu			$3.00		$1.40		$4.50		$4.20		$4.40		$0.16		$0.07	
Cash Operating Cost			25		53		18		19		21		700		1110	
Cash Operating + Taxes + Dep.			34		73		24		26		28		870		1510	
Cash Operating + Total Fixed Costs			48		101		33		35		37		1120		2080	

Table 3: Assumptions for Cost of Production for Growing Crops in the Dark Brown Soil Zone

1) Seed including cleaning:
   - Wheat - 1.25 bu/ac @ 4.80 bushel
   - Barley - 1.5 bu/ac @ 2.75 bushel
   - Flax - 40 lbs/ac @ 7.50 bushel
   - Lentils (Laird) - 85 lbs/ac @ 0.35 lb.
   - Canaryseed - 35 lbs/ac @ 0.15 lb.

2 Fertilizer - Nitrogen on Stubble
   Cereals, Canaryseed - 40 lbs. N per acre @ 0.24/lb. N
   Canola - 40 lbs. N, Flax - 35 lbs. N
   Other
   Phosphorus - 50 lbs. 11-51-0/acre @ $340/tonne
   Flax - 40 lbs. 11-51-0/acre

3) Chemicals:
   Herbicides - Cereals, Canaryseed - 50% of acres sprayed for wildoats and 100% for broadleaf weeds
   - Canola - Wildoat
   - Flax - Wildoat and Broadleaf
   - Peas, Lentils - Wildoat, Broadleaf
   Others - Barley - Seed treatment
   - Flax - Seed treatment

   Chemicals used and rates vary with individual farm weed problems and operator preference.

4) Operating Costs - Other than seed, fertilizer and chemicals, costs are based on averages for Dark Brown soils.

5) Crop Insurance - 1986 Premium levels for 70% coverage on high dollar rate for F rated soils, Risk Area 16.

6) Operating interest as calculated on all cash operating costs at 10% for 6 months on all crops, 18 months for fallow.

7) Machinery depreciation is based on a machinery investment of $100 per cultivated acre depreciated at 15% on a straight line basis.

8) Building depreciation estimated at $30 per cultivated acre depreciated at 5%.

9) Labour and Management - We are assuming a living cost of $15,000.00 for a 1200 acre farm for return to labour and management.

10) Land cost was estimated as a cash rent of $15/acre. Actual land costs should be used by individual farmers.

11) Return to investment - No return to investment was calculated on building and machinery.

12) Crop prices were estimated from market values in February, 1987. No allowance was made for lost revenue on the crop stored until it could be marketed.

Rotation in the Dark Brown Soil Zone

CASH OPERATING COSTS	Fallow	My Farm	Wheat Fallow	My Farm	Wheat Stubble	My Farm	75% Feed Barley Fallow	My Farm	75% Feed Barley Stubble	My Farm
Seed	$0.00		$6.00		$6.00		$4.00		$4.00	
Fertilizer - Nitrogen	$0.00		$0.00		$9.60		$0.00		$9.60	
- P + Other	$0.00		$7.70		$7.70		$7.70		$7.70	
Chemical - Herbicides	$0.00		$6.00		$7.50		$6.00		$7.50	
- Others	$0.00		$0.00		$0.00		$1.10		$1.10	
Machinery Operating - Fuel	$3.50		$7.00		$7.00		$7.00		$7.00	
- Repair	$2.00		$5.00		$5.00		$5.00		$5.00	
Hired Labour, Custom Work	$0.00		$2.00		$2.00		$2.00		$2.00	
Utilities	$1.00		$1.00		$1.00		$1.00		$1.00	
Crop Insurance	$0.00		$3.50		$2.50		$2.50		$3.90	
Insurance,Licences,Overhead	$2.00		$2.00		$2.00		$2.00		$2.00	
Building Repair, Misc.	$1.50		$1.50		$1.50		$1.50		$1.50	
Subtotal	$10.00		$41.70		$51.80		$39.80		$52.30	
Interest on Operating	$1.50		$2.10		$2.60		$2.00		$2.60	
TOTAL CASH OPERATING	$11.50		$43.80		$54.40		$41.80		$54.90	
FIXED COSTS										
Taxes	$4.00		$4.00		$4.00		$4.00		$4.00	
Machinery Depreciation	$9.00		$18.00		$18.00		$18.00		$18.00	
Building Depreciation	$1.50		$1.50		$1.50		$1.50		$1.50	
Land Cost	$15.00		$15.00		$15.00		$15.00		$15.00	
Labour Mgmt. Living Allow.	$3.00		$17.25		$17.25		$17.25		$17.25	
Total - Fixed Costs	$32.50		$55.75		$55.75		$55.75		$55.75	
TOTAL COSTS	$44.00		$99.55		$110.15		$97.55		$110.65	
Value Crop ($/Bu.$/Lb)			$3.00		$3.00		$2.00		$2.00	
Cash Operating Cost			15		18		21		27	
Cash Operating + Taxes + Dep			22		26		33		39	
Cash Operating + Total Fixed Costs			33		37		49		55	
Total Costs + Fallow			48				71			

Table 4: Continued

	Flax Fallow	My Farm	Flax Stubble	My Farm	Lentils Fallow	My Farm	Lentils Stubble	My Farm	Canary Fallow	My Farm
CASH OPERATING COSTS										
Seed	$5.40		$5.40		$29.80		$29.80		$5.20	
Fertilizer - Nitrogen	$0.00		$8.40		$0.00		$0.00		$0.00	
- P + Other	$6.20		$6.20		$7.70		$7.70		$7.70	
Chemical - Herbicides	$9.00		$13.00		$18.00		$18.00		$7.00	
- Others	$0.80		$0.80		$0.00		$0.00		$0.00	
Machinery Operating - Fuel	$7.00		$7.00		$7.00		$7.00		$7.00	
- Repair	$5.00		$5.00		$5.00		$5.00		$5.00	
Hired Labour, Custom Work	$2.00		$2.00		$2.00		$2.00		$2.00	
Utilities	$1.00		$1.00		$1.00		$1.00		$1.00	
Crop Insurance	$6.20		$4.00		$8.70		$6.10		$4.60	
Insurance,Licences,Overhead	$2.00		$2.00		$2.00		$2.00		$2.00	
Building Repair, Misc.	$1.50		$1.50		$1.50		$1.50		$1.50	
Subtotal	$46.10		$56.30		$82.70		$80.10		$43.00	
Interest on Operating	$2.30		$2.80		$4.10		$4.00		$2.20	
TOTAL CASH OPERATING	$48.40		$59.10		$86.80		$84.10		$45.20	
FIXED COSTS										
Taxes	$4.00		$4.00		$4.00		$4.00		$4.00	
Machinery Depreciation	$18.00		$18.00		$18.00		$18.00		$18.00	
Building Depreciation	$1.50		$1.50		$1.50		$1.50		$1.50	
Land Cost	$15.00		$15.00		$15.00		$15.00		$15.00	
Labour Mgmt. Living Allow.	$17.25		$17.25		$17.25		$17.25		$17.25	
Total - Fixed Costs	$55.75		$55.75		$55.75		$55.75		$55.75	
TOTAL COSTS	$104.15		$114.85		$142.55		$139.85		$100.95	
Value Crop ($/Bu.$/Lb)	$4.20		$4.20		$0.16		$0.16		$0.07	
Cash Operating Cost	12		14		540		530		650	
Cash Operating + Taxes + Dep	17		20		690		670		980	
Cash Operating + Total Fixed Cost	25		27		890		870		1440	

Similarily, yields to cover costs are high.

Large variations in the cost of production occur under different climatic conditions found in Saskatchewan. Producers living in the same area can have a large variation in costs, especially fixed costs. No two people look at the figures the same way and everyone can use different assumptions. These figures serve as a guideline but the only reliable figures are a producer's own figures, with his assumptions.

Deficiency and stabilization payments have a significant effect on a producer's decision to choose different crops. Stabilization will have an effect, if maximum contribution cannot be obtained, because ineligible crops are grown. On most farms maximum contributions are obtained but, with poor production or low acreages, it affects the decision to grow special crops. The deficiency payments have a more direct effect. If you assume there will be a deficiency payment similar to last year, deduct bushels/acre from the eligible crops to be equivalent to the deficiency payment.

Example - In N.E. Saskatchewan, the deficiency payment on wheat was $17.02 per acre, divided by $3.00, is equal to 5.7 bu/acre.

47 bushels - 5.7 = 41.3 bu/acre, in relation to canola at 33 bushels.

Deficiency payments are an unknown but can play a significant role in cropping decisions.

Other cropping alternatives that have reasonable returns are forage grass seeds. Net return for bromegrass and crested wheat

seed have been $200 per acre plus in recent years. Also red clover, sweetclover and alfalfa have good returns. However, the forage seed market is very volatile and by the time seed crops are obtained, prices could have changed drastically.

Growing hay could provide better returns than from annual cereal and oilseed crops. However, markets would have to be obtained by growers.

There are a large number of other specialty crops such as: borage, kochia, caraway seed, coriander, dill, safflower, etc. Markets for these crops are generally limited and production practises have not been well established. A few farmers could profit from specialty crops but I would be cautious. Make sure you check all the production information regarding adaptability, yield, maturity, weed problems, etc. and establish markets and evaluate the cost benefits of individual crops. The development of any special crop in Sask. can be a great benefit to producers and research should be encouraged.

2. Fallow vs Stubble Cropping

Producers should evaluate the costs of production before making large changes in seeded acreage. Many producers are talking of increasing fallow acreage all over Saskatchewan. We all know stubble cropping is more favourable in areas where there is a higher probability of obtaining more moisture, so the ratio of stubble to fallow yields is lower. However, it can also be an advantage in dryer areas if soil moisture reserves are good, especially on heavy textured soils.

In N.E. Saskatchewan, Table 5, 6 and 7 compares continuous cropping, seeding 75% of the farm and seeding 50% of the farm at the yields estimated. Continuous cropping has the highest net return to land, labour and management, with and without deficiency and stabilization payments but also has the highest operation money requirement. Producers may not be able to obtain adequate operating capital and, therefore, reduce seeded acreage.

Of major concern is the crop rotation where you seed 75% of the farm but it is all seeded on stubble, because no land was fallowed last year. This resulted in a net return of $11,120.00 less than continuous cropping and $15,260.00 less, if deficiency and stabilization payments are included.

Table 5 - Crop value and yield estimates for crop production in North East Saskatchewan

Crop	Value	Yield	
		Stubble	Fallow
Wheat	$3.00 bu	35	40
Barley	$1.40 bu	60	70
Canola	$4.50 bu	25	30
Flax	$4.20 bu	22	27
Peas	$4.40 bu	30	--

Table 6 - Typical crop rotations in N.E. Saskatchewan for a 1000 acre farm with continuous cropping, 75% seeded and 50% seeded

Crop	Continuous	75%	50%
Wheat F	---	50	200
St	400	150	---
Barley St	100	50	---
Canola F	---	200	200
St	200	---	---
Flax F	---	---	100
St	150	150	---
Peas St	150	150	---
	1000	750	500

Table 7 - Total operating capital required and returns to land, labour and management for a 1000 acre farm, using different crop rotations, with and without deficiency payments. Returns include all costs, except land cost and management or living allowance.

Crop Rotation	Operating & Interest	Returns to Land, Labour, Management: No Payments	Returns to Land, Labour, Management: Deficiency & Stabilization
Continuous Cropping	$79,570	(1,010)	$26,340
75% Seeded, 25% on Fallow	$62,500	(3,890)	$19,320
50% Seeded on Fallow	$41,530	(7,190)	$14,770
75% Seeded, all on Stubble	$65,490	(12,130)	$11,080

The returns to land, labour and management for a 1200 acre farm seeded to wheat, in the Dark Brown soil zone, using different rotations, is shown in Table 8.

Table 8 - Returns to land, labour and management on a 1200 acre farm, in the Dark Brown soil zone, using different crop rotations, with and without deficiency payments

Crop Rotation	Operating & Interest	Returns to Land, Labour, Management No Payments	Deficiency & Stabilization
(A) 1/2 - 1/2	$32,100.00	($3,470)	$19,240.00
(B) 1/3 - 2/3	$43,870.00	($5,170)	$22,040.00
(C) 1/4-3/4	$49,755.00	($6,020)	$22,720.00
(D) 1/2 - 1/2 St	$34,940.00	($10,090)	$11,530.00

Assumptions: Fallow Yield = 30 bu/ac
Stubble Yield = 22.5 bu/ac, 75% Fallow Yield
Value Wheat = $3.00/bu

A yield of 30 bu/acre was assumed on fallow, 22.5 bu/acre on stubble or 75% of fallow yield and a value for wheat of $3.00 per bushel. The costs of production were used from Table 3 and 4. The 1/2 fallow 1/2 seeded rotation (A) provides the highest returns, with no deficiency payments. When deficiency payments are included, the 1/3-2/3 rotation provided higher returns. However, if the farm was 1/3-2/3 last year and 1/2 is seeded this year (D), 200 acres on stubble, the return to land labour and

management with deficiency & stabilization payments included is $8,420.00 less than the 1/2-1/2 rotation.

Again, these are only examples and a producer's own figures are the only ones to use; however, they do show that increasing fallow acreage over last year can result in a lower return the first year, because of having to seed stubble and obtaining stubble yields.

Using the figures for the Dark Brown soils, stubble yields have to yield 83% of fallow without deficiency and stabilization payments and approximately 72% with payments.

To evaluate the pros and cons of stubble cropping, a producer needs to establish average yields he can expect on fallow and stubble for his farm and estimate his costs of production and adjust for payments that he expects on the crops produced.

Using research results published by Research Stations and the University can be of great benefit in providing guidelines for stubble cropping. For example, Zentner, Campbell, Johnson and Bacon wrote a paper on cropping prospects for 1987 on a crop rotation study at Swift Current. They found that, if the price of wheat slips to $3.00/bu, the only chance of economic survival for grain producers in the short run is with the 2 year fallow-wheat rotation.

Moisture is the main factor affecting crop yields in Saskatchewan. Any practise that can increase the amount of moisture stored in stubble, such as snow trapping, zero tillage, maintaining trash cover, trap strips, etc. will result in

improved stubble yields in areas and years moisture is limited. Such practises could have a significant effect on the success of stubble cropping, especially in the Brown and Dark Brown soils.

Crop Rotations

The length of the crop rotation is important for soil quality, as well as profitability. Low grain prices results in fallowing in the Brown and Dark Brown been more profitable but increases the risk of loss of soil quality. In the Black and Grey soils, stubble cropping can still be profitable. Also, 40-60% of the fallow fields in the Black and Grey soils require nitrogen fertilizer for optimum yields, reducing the difference in cost between seeding stubble or fallow.

An alternative to fallow in the better moisture areas of Saskatchewan is to grow a green manure crop, such as sweetclover or red clover. Indianhead lentils have potential for the Brown soils.

Rotating crops reduces weed, insect and disease pressure for more profitable yields and lower overall pesticide costs. For example, only growing canola on a field every 4-5 years can reduce the incidence of blackleg. Rotating crops can improve quality by reducing weed seed contents in crops like mustard or canola.

Under financial restraints, producers will try to push rotation of crops that have the potential for high returns such as canola, peas and lentils. A good field record of past disease and weed infestations in fields can be a great asset in selecting

fields to reduce the risk of disease or weed problems that are reducing yields or quality.

3. Crop Inputs

Fertilizer - The major decision is to determine what crop to seed and is it on stubble or fallow, then fertilize to requirements.

If you grow a crop you have to grow a good one. In cases where crops are inadequately fertilized, the cost of the lost yield is much greater than the cost of fertilizer. However, over fertilization or poor responses due to inadequate precipitation, can result in low returns. It is a matter of adopting fertilizer recommendations to the precipitation expected and adjusting for soil moisture reserves in the spring.

Lower grain prices have reduced the economical optimum rate of fertilizer application. Typical nitrogen rates recommended in the Black and Grey soil zones have been reduced 10-15 lbs N per acre. Low fall moisture reserves occured in Northern Saskatchewan in the fall of 1986. However, long term rainfall has traditionally provided good fertilizer responses. As a result, fertilizer rates may only be reduced slightly.

In the Brown and thin Black soils, average N levels in the soil are approximately 10% less than last year. Along with above average moisture conditions in these soil zones, fertilizer rates should be similar to long term averages.

Although fertilizer rates may be reduced slightly, it is important to maintain the nutrient balance. For example,

applying nitrogen fertilizer on a soil deficient in sulfur can reduce the yields of canola due to severe sulfur deficiencies.

Many producers may have limited funds for fertilizer. It is more profitable to put some fertilizer on every acre that needs it rather than putting a large amount on some land and none on the other. This theory applies well to phosphorus application. Be careful to not cut nitrogen rates on stubble to the point it is more profitable to fallow.

Soil testing is more important in tough times than when profits are high. It can provide the basis to adjust rates to meet crop requirements on different fields. Spending 25 to 50 cents per acre to adjust fertilizer of $15.00 to $25.00 per acre makes good economic sense. However, less than 10% of the fields in Saskatchewan are soil tested every year.

Soil testing can play an important role in selecting rates of fertilizer applied to different fields, when operating capital is limited. It can select fields and crops that give the highest return for every dollar invested in fertilizer.

Fertilizer placement can improve the efficiency of fertilizer use. Banding in the fall is superior to broadcasting and banding provides better return when dry conditions occur in the spring. However, unless the farmer has equipment to band fertilizer, it may be difficult to justify purchasing equipment under the present economic restraints.

Seed placement of N and P may be an alternative that provides efficient use of nitrogen where rates less than 30-40 lbs/acre are required on cereals. Also, combining fertilizer

Management

Putting all the agronomic alternatives together to produce grain at the lowest cost per bushel requires management. Attention to all the details, timeliness of application, maintaining field records, using test strips and having a thorough knowledge of all agronomic practises play an important role in management.

Management becomes more critical in tough times than when profits are good. When grain prices are high, good management increases the profits. With low grain prices, good management allows a farmer to survive.

Low grain prices, in relation to the cost of production, will result in farmers becoming discouraged. As one farmer said, at a meeting in Tisdale, it is important to have your machinery in good repair but you must also prepare yourself. Evaluate your options, check research and extension information, develop a record system and use your own costs of production to make decisions.

It is also discouraging for agriculture extension staff, researchers and industry people when we don't have the answers to assist producers under present financial restraints.

We also have to prepare ourselves to listen to producers' concerns and provide the best information and alternatives to producers to allow them to make sound judgements on the best options for their farm.

application with tillage or seeding operations can reduce the costs of application.

Weed Control

The money spent on weed control for chemicals and tillage operations is a substantial part of the costs of growing a crop. To minimize this cost and maintain an adequate level of weed control and crop yields, requires management and a little help from Mother Nature.

Some points to consider are:

1. Weed identification and monitoring - Know the weed problems you have in each field and match the chemicals to the problem. Monitor the fields frequently at emergence and try to estimate the density of weed population.
2. Weed density - With lower grain prices, you can accept higher weed populations at the cost of polluting land for future years. For example, research has shown a population of 340 green foxtail/m only reduced wheat yields 3.7% and 520/m2 reduced yields 10.1%
3. Crop competition - Seed the most competitive crops on land major weed problems are expected. The order of the competitive ability of crops from the highest to the lowest is barley, wheat, canola, flax, peas and lentils. Seedbed preparation and seeding depth are important to get the crop ahead of the weeds. Producers could be using delayed seeding for wild oat control. Be cautious, delayed seeding can result in reduced yields, frost damage and poor yields. As a result, it may be cheaper to spray.

4. Spot spraying - Spraying parts of fields can be economical but an excellent job of mapping weed problems in each field is essential.
5. Chemical application - Monitor weed populations at emergence and spray at the appropriate leaf stage for the crop and weed population. Calibrate the sprayer and do a good job of spraying.

Many producers are probably going to shave rates in 1987 to reduce costs. When reducing rates, good application becomes more critical. As one farmer said, you can't get too fancy, you have to be effective.

Tillage and Seedbed Preparation

Reduced tillage can be an effective method to reduce costs of production and maintain or increase yields. A small reduction in machinery costs, fuel and repair can significantly reduce production costs. Reduced tillage, maintaining a trash cover by using a rod weeder and spraying fields with a 2,4-D in the fall or spring are examples of how tillage costs can be reduced and soil and moisture conserved. These practises are best adopted to the Brown and Dark Brown soil zones.

Reduced tillage can also be effective in the north, if fallow is practised; however, under continuous cropping, tillage for seedbed preparation is important. Obtaining a moist, firm seedbed is essential for quick and uniform emergence to obtain crop competition, especially if chemical use is reduced.